

ATTACHMENT 6F

**ARTERIAL LIFE CYCLE PROGRAM
REQUEST TO SUBSTITUTE PROJECT OR CHANGE SCOPE OF PROJECT**

Name of Original Project: El Mirage Rd: Thunderbird Rd to Bell Rd

Lead Agency: Maricopa County RTP ID: ACI-ELM-20-03

RTP Project Budget: \$19,842,652 Request Date: 6/1/2011

Name of Rescoped/ Substitute Project: El Mirage Rd: Northern Avenue to Bell Rd (Phase I)

Description of Rescoped/ Substitute Project: The change request will combine two existing ALCP Projects (El Mirage Rd: Thunderbird to Bell and El Mirage Rd: Thunderbird to Northern). Phase I one the project will include three segments: (1) El Mirage Rd: Bell Rd to Picerne, (2) El Mirage Rd: Northern Avenue to Peoria, and (3) El Mirage Rd: Peoria to Cactus.

ORIGINAL PROJECT SCHEDULE

WORK PHASE	WORK FISCAL YEAR	REIMBURSEMENT FISCAL YEAR	PROGRAMMED REIMBURSEMENT	CURRENT FUND TYPE
Pre-Design	2008-2010	2009/2010	\$1,447,581	RARF
Design	2011/2012	2011-2013	\$1,950,901	RARF
ROW	2013/2014	2013/2014	\$2,151,746	RARF
Construction	2015/2016	2015-2017	\$15,740,005	RARF
TOTAL			\$21,290,232	RARF

RESCOPED/SUBSTITUTE PROJECT BUDGET

WORK PHASE	WORK FISCAL YEAR	TOTAL COST	LOCAL SHARE	REGIONAL SHARE	REGIONAL %
SEGMENT (1) - El Mirage Rd: Bell Road to Picerne Drive					
Design	2011/2012	\$250,000	\$250,000	\$0	0.00%
ROW	2011-2013	\$2,500,000	\$2,500,000	\$0	0.00%
Construction	2013/2014	\$3,250,000	\$3,250,000	\$0	0.00%
SUBTOTAL		\$6,000,000	\$6,000,000	\$0	0.00%
SEGMENT (2) - El Mirage Rd: Northern Avenue to Peoria Avenue					
Design	2012	\$1,097,095	\$329,129	\$767,967	70.00%
ROW	2013	\$2,935,964	\$880,789	\$2,055,175	70.00%
Construction	2014/2015	\$11,061,326	\$3,318,398	\$7,742,928	70.00%
SUBTOTAL		\$15,094,385	\$4,528,316	\$10,566,070	70.00%
SEGMENT (3) - El Mirage Rd: Peoria Avenue to Cactus Road					
Design	2012	\$521,905	\$156,572	\$365,334	70.00%
ROW	2013	\$3,090,418	\$927,125	\$2,163,293	70.00%
Construction	2014/2015	\$7,720,145	\$2,316,044	\$5,404,102	70.00%
SUBTOTAL		\$11,332,468	\$3,399,740	\$7,932,728	70.00%

SEGMENT (1) - EL MIRAGE RD: BELL ROAD TO PICERNE DRIVE			
CURRENT FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	4	Average Daily Traffic	7779
North/South Lanes	2:2	V/C Ratio	0.25
East/West Lanes	NA	Bus Pullouts	No
Length of Facility	0.5	Bicycle Facilities	No
PLANNED FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	10	Bus Pullouts	No
North/South Lanes	5:5	Bicycle Facilities	Yes
East/West Lanes	NA	Pedestrian Facilities	Yes
Length of Facility	0.5	Paved Shoulders/Curbs	Yes
SEGMENT (2) - EL MIRAGE RD: NORTHERN AVENUE TO PEORIA AVENUE			
CURRENT FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	2	Average Daily Traffic	16934
North/South Lanes	1:1	V/C Ratio	1.09
East/West Lanes	NA	Bus Pullouts	No
Length of Facility	2	Bicycle Facilities	No
PLANNED FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	6	Bus Pullouts	No
North/South Lanes	3:3	Bicycle Facilities	No
East/West Lanes	NA	Pedestrian Facilities	Yes
Length of Facility	2	Paved Shoulders/Curbs	Yes
SEGMENT (3) - EL MIRAGE RD: PEORIA AVENUE TO CACTUS ROAD			
CURRENT FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	2	Average Daily Traffic	15587
North/South Lanes	1:1	V/C Ratio	1
East/West Lanes	NA	Bus Pullouts	No
Length of Facility	1	Bicycle Facilities	No
PLANNED FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	4	Bus Pullouts	No
North/South Lanes	2:2	Bicycle Facilities	Yes
East/West Lanes	NA	Pedestrian Facilities	Yes
Length of Facility	1	Paved Shoulders/Curbs	Yes

Please explain the reason for requesting to substitute or rescope the original project.	The Design Concept Report for El Mirage Road, Northern Avenue to Bell Road was completed in December 2009. Based on the outcome of this report, the corridor was prioritized and segmented based on the anticipation of each agency's responsibility and the impending change in lead role.
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What technical documents and supporting analysis are available to demonstrate the feasibility of the requested project?	Corridor Study, Design Concept Report, Value Engineering Analysis
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Description of how the requested project would improve mobility/safety and reduce congestion.	The projects will add roadway capacity and the intersection improvements will improve traffic flow.
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Requested Project's Benefit to the MAG Region?	The DCR indicates that these roadways carry considerable regional traffic. The improvements to the corridor will provide a north-south option for the regional traveller and will provide connectivity to the Northern Parkway and Bell Road traffic.
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Please attach the following documentation when submitting the request to MAG Staff:

- A map of the original project
- A map of the substitute or rescope project
- Corridor Studies and/or other plan documents
- Technical analysis conducted (ie. level of service, modeling)

**ARTERIAL LIFE CYCLE PROGRAM
REQUEST TO SUBSTITUTE PROJECT OR CHANGE SCOPE OF PROJECT**

Name of Original Project	El Mirage Rd: Thunderbird Rd to Northern Avenue
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Lead Agency	Maricopa County	RTP ID	ACI-ELM-30-03
RTP Project Budget	\$16,706,766	Request Date	6/1/2011

Name of Rescoped/ Substitute Project	El Mirage Rd: Northern Avenue to Bell Rd (Phase II)
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Description of Rescoped/ Substitute Project	The change request will combine two existing ALCP Projects (El Mirage Rd: Thunderbird to Bell and El Mirage Rd: Thunderbird to Northern). Phase II will include three segments: (4) Thunderbird Rd: El Mirage Rd to Grand Ave, (5) El Mirage Rd: Cactus Rd to Grand Avenue, and (3) El Mirage Rd: Grand Ave to Picerne Drive.
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ORIGINAL PROJECT SCHEDULE

WORK PHASE	WORK FISCAL YEAR	REIMBURSEMENT FISCAL YEAR	PROGRAMMED REIMBURSEMENT	CURRENT FUND TYPE
Study	2008	2019	\$303,800	RARF
Design	2016	2019	\$3,590,083	RARF
ROW	2016	2019	\$2,280,436	RARF
Construction	2017/2018	2019/2020	\$10,532,447	RARF
TOTAL			\$16,706,766	RARF

RESCOPED/SUBSTITUTE PROJECT BUDGET

WORK PHASE	WORK FISCAL YEAR	TOTAL COST	LOCAL SHARE	REGIONAL SHARE	REGIONAL %
SEGMENT (4) - Thunderbird Rd: El Mirage Road to Grand Avenue					
Design	2012	\$592,000	\$177,600	\$414,400	70.00%
ROW	2013	\$500,000	\$150,000	\$350,000	70.00%
Construction	2014/2015	\$3,500,000	\$1,050,000	\$2,450,000	70.00%
SUBTOTAL		\$4,592,000	\$1,377,600	\$3,214,400	70.00%
SEGMENT (5) - El Mirage Rd: Cactus Road to Grand Avenue					
Design	2012	\$1,947,267	\$584,180	\$1,363,087	70.00%
ROW	2016/2017	\$3,384,014	\$1,015,204	\$2,368,810	70.00%
Construction	2018/2019	\$15,863,320	\$4,758,996	\$11,104,324	70.00%
TOTAL		\$21,194,601	\$6,358,380	\$14,836,221	70.00%
SEGMENT (6) - El Mirage Rd: Grand Avenue to Picerne Drive					
Design	2031	\$1,500,000	\$1,500,000	\$0	0.00%
ROW	2031	\$3,500,000	\$3,500,000	\$0	0.00%
Construction	2031	\$10,000,000	\$10,000,000	\$0	0.00%
*SUBTOTAL		\$15,000,000	\$15,000,000	\$0	0.00%

*Based on information from DCR for Grand Avenue to Greenway Road -Subject to change

SEGMENT (4) - THUNDERBIRD RD: EL MIRAGE ROAD TO GRAND AVENUE			
CURRENT FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	4	Average Daily Traffic	15446
North/South Lanes	2:2	V/C Ratio	0.85
East/West Lanes	NA	Bus Pullouts	No
Length of Facility	0.75	Bicycle Facilities	No
PLANNED FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	4	Bus Pullouts	Yes
North/South Lanes	2:2	Bicycle Facilities	Yes
East/West Lanes	NA	Pedestrian Facilities	Yes
Length of Facility	0.75	Paved Shoulders/Curbs	Yes
SEGMENT (5) - EL MIRAGE RD: CACTUS ROAD TO GRAND AVENUE			
CURRENT FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	2 to 4	Average Daily Traffic	10584
North/South Lanes	1:1 or 2:2	V/C Ratio	0.66
East/West Lanes	NA	Bus Pullouts	No
Length of Facility	1.6	Bicycle Facilities	No
PLANNED FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	4	Bus Pullouts	No
North/South Lanes	2:2	Bicycle Facilities	Yes
East/West Lanes	NA	Pedestrian Facilities	Yes
Length of Facility	1.6	Paved Shoulders/Curbs	Yes
SEGMENT (6) - EL MIRAGE RD: GRAND AVENUE TO PICERNE DRIVE			
CURRENT FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	4	Average Daily Traffic	7779
North/South Lanes	2:2	V/C Ratio	1.09
East/West Lanes	NA	Bus Pullouts	No
Length of Facility	2	Bicycle Facilities	No
PLANNED FACILITY FEATURES (RESCOPED/SUBSTITUTE PROJECT)			
Total Lanes	4	Bus Pullouts	No
North/South Lanes	2:2	Bicycle Facilities	No
East/West Lanes	NA	Pedestrian Facilities	Yes
Length of Facility	2	Paved Shoulders/Curbs	Yes

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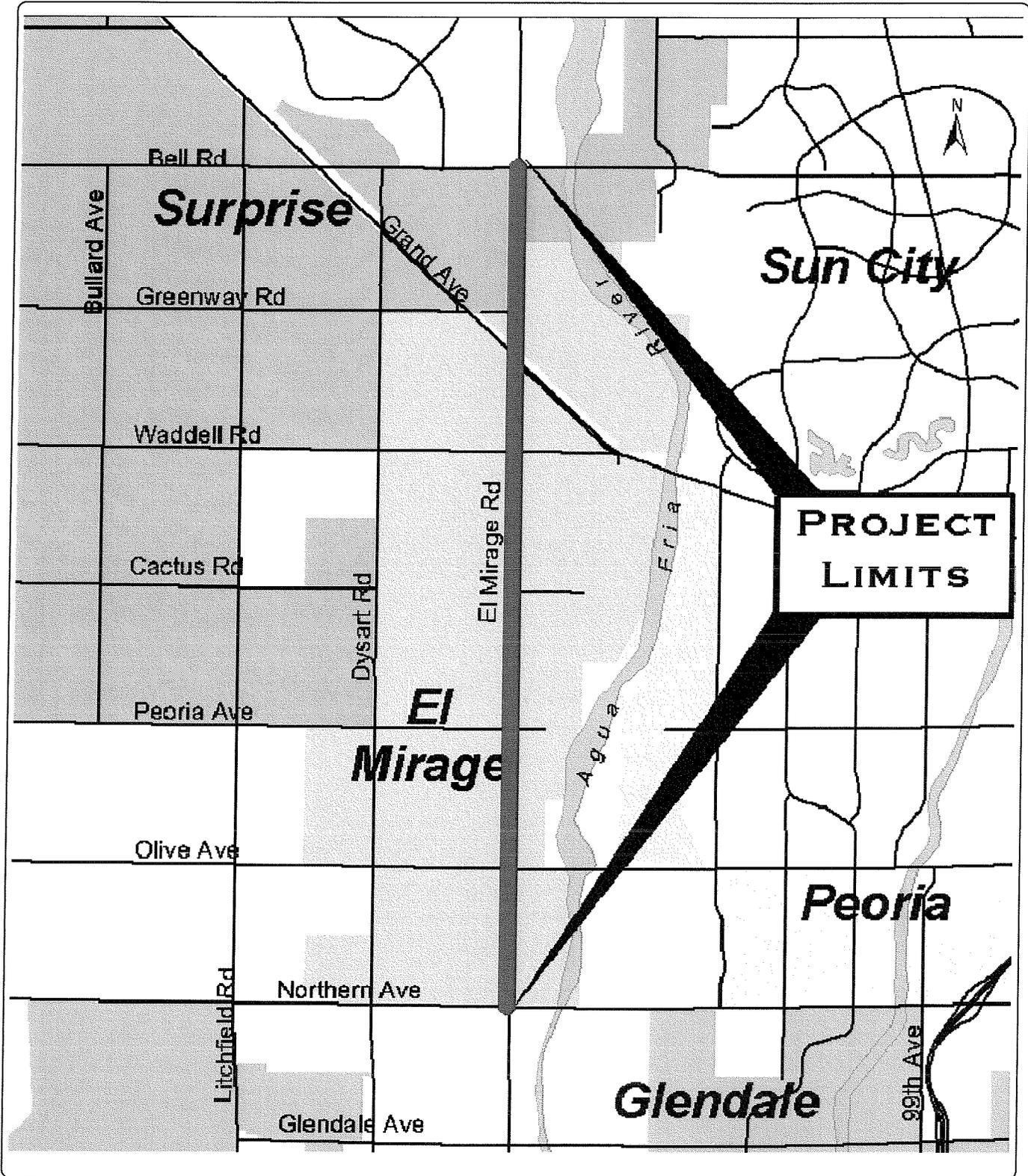
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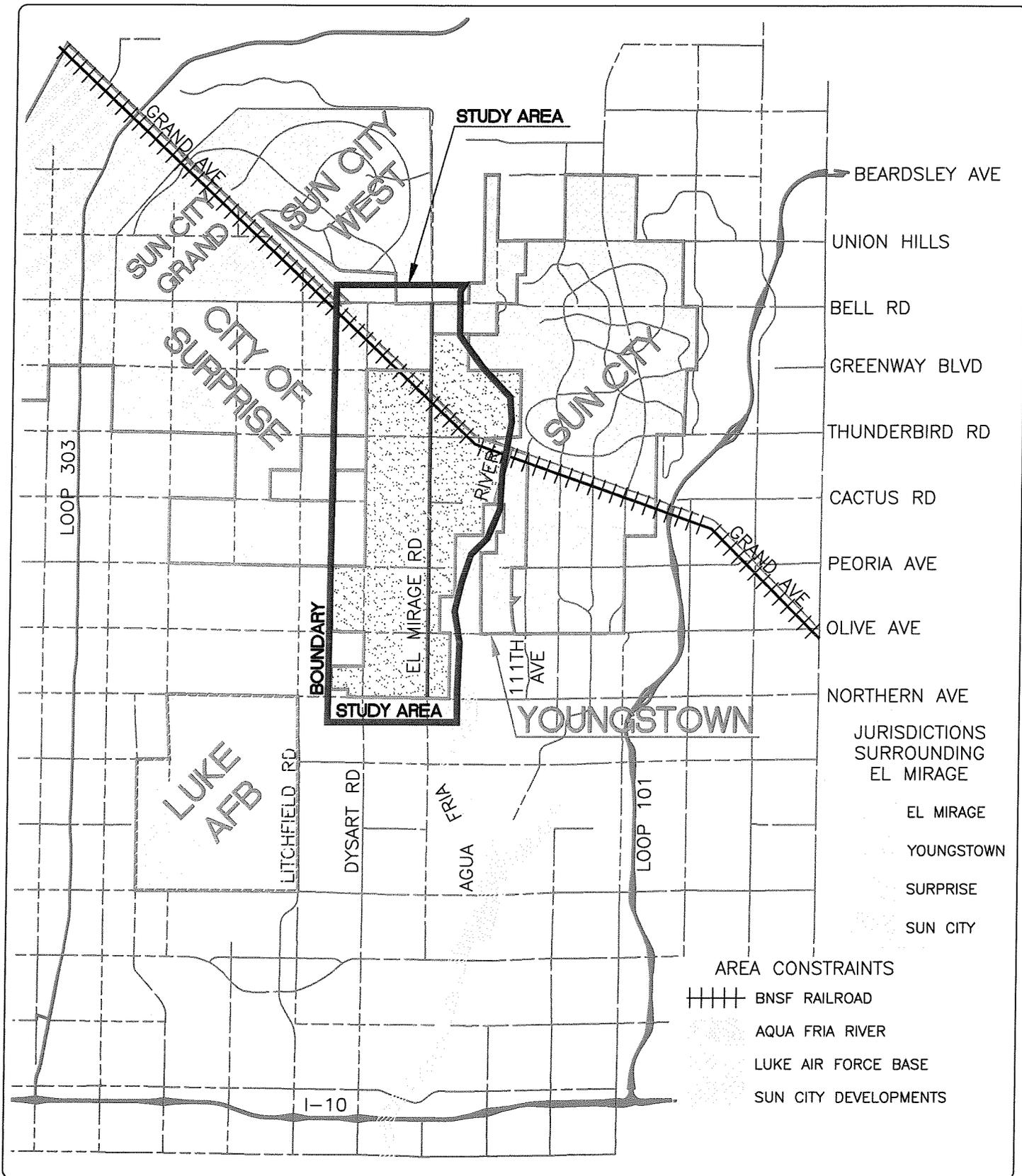
ORIGINAL PROJECT SCOPE



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EL MIRAGE CORRIDOR IMPROVEMENT STUDY
 STUDY AREA MAP
 MCDOT ARIZONA

PROJ. NO.	0505915
DATE	01/2007
FIGURE 2.1.2	



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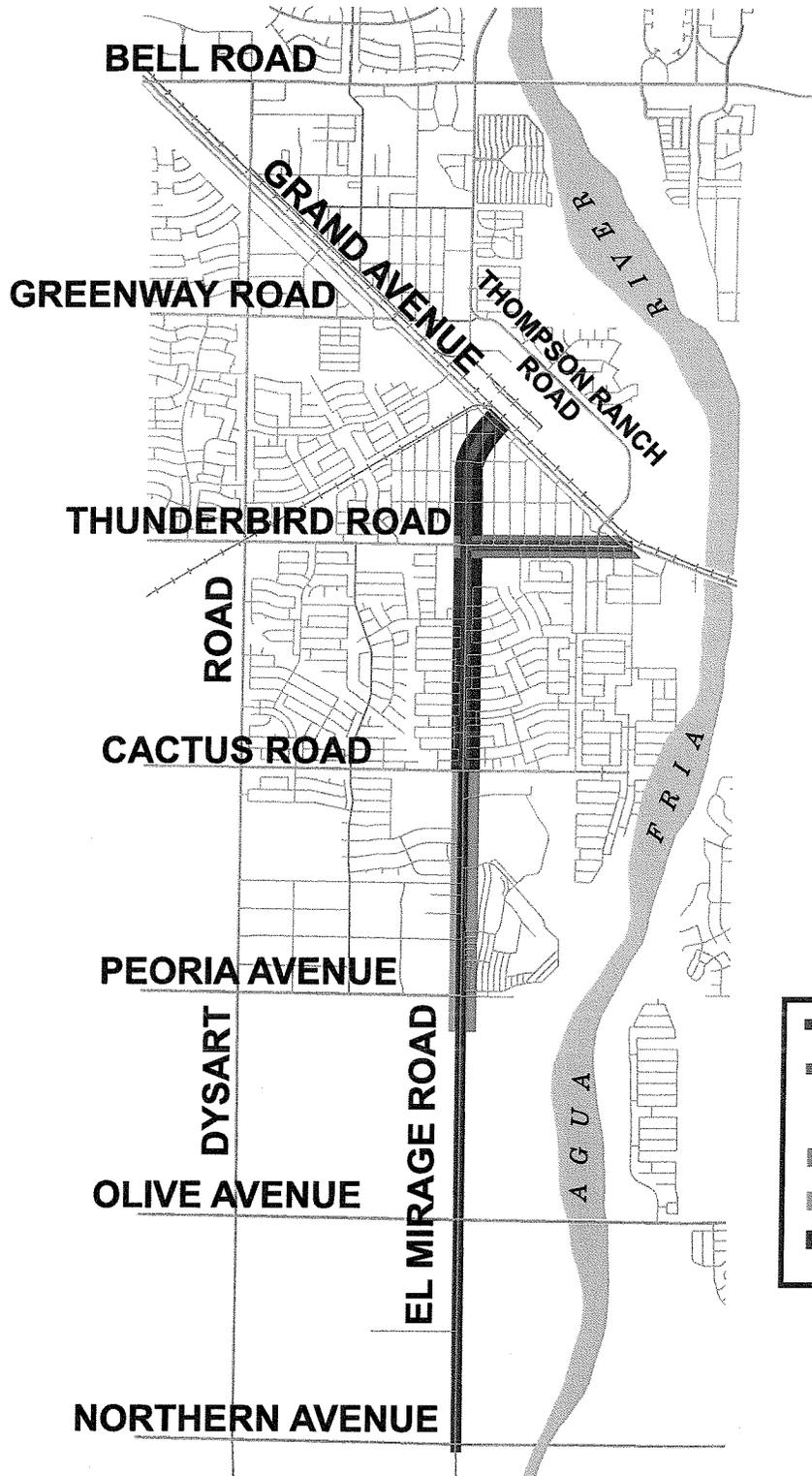
EL MIRAGE CORRIDOR IMPROVEMENT STUDY
 VICINITY MAP
 MCDOT ARIZONA

PROJ. NO. 0505915
 DATE 01/2007
 FIGURE 2.11

El Mirage Road

Northern Avenue to Grand Avenue

IGA Project Phases



LEGEND

	Phase 1: Design
	Phase 2: Design
	Phase 3: ROW & Construction
	Phase 4: ROW & Construction
	Phase 5: ROW & Construction
	Phase 6: ROW & Construction

El Mirage Road, Northern Avenue to Cactus Road Scoping Report MCDOT Project No. TT344

*Prepared for:
Maricopa County Department of Transportation (MCDOT)*

Prepared by:



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EXPIRES 6/30/2012

November 10, 2010

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EXECUTIVE SUMMARY

Purpose of Project

The purpose of this project is to develop a recommended improvement program for El Mirage Road between Northern Avenue and Cactus Road. The program is intended to provide guidelines that the Maricopa County Department of Transportation (MCDOT) can follow to implement roadway improvements on this three mile long segment of El Mirage Road.

This scoping report builds on the Final Design Concept Report (DCR) for El Mirage Road: Northern Avenue to Bell Road prepared by MCDOT as published in December 2009. In the DCR, it was recommended that El Mirage Road be widened to an ultimate six lane Urban Principal Arterial cross section. The DCR also included an interim alternative that provides for a four lane section including the raised median for the ultimate six lane cross section. In this interim improvement, shoulders would be provided on the outside of the travel lanes, allowing for future widening to provide the third through lane and associated curb, gutter & sidewalk.

The goal of this scoping report was to enhance the horizontal alignment of El Mirage Road to take advantage of existing features and other value added elements identified after completion of the DCR. Another goal of this report was to update the cost estimates prepared as part of the DCR.

Based on collaboration with MCDOT and City of El Mirage staff, the following guidelines were developed:

1. The Northern Avenue/El Mirage Road intersection should be designed to accommodate the future Northern Parkway/El Mirage Road interchange, which will be configured as a single point, urban interchange with frontage roads.
2. In the interim, no more than two lanes in each direction are required on El Mirage Road.
3. At the intersections of El Mirage Road with Olive Avenue, Peoria Avenue and Cactus Road, ultimate intersection improvements as identified in the Master Plan Alternative of the DCR will be provided.
4. The horizontal alignment can be shifted as required to take advantage of existing improvements and right of way or to avoid utility impacts.

Based on the guidelines above, a refined horizontal alignment was developed, as is shown in **Appendix B**. This alignment allowed the proposed improvements to retain existing paving, incorporate existing improvements and to avoid significant utilities, such as the 69 kV power poles along the north side of Olive Avenue and Cactus Road.

In order to develop the recommended improvement program, the three-mile corridor was broken into seven distinct sub-projects. They are:

1. Northern Avenue/El Mirage Road Intersection
2. El Mirage Road, Northern Avenue to Olive Avenue
3. Olive Avenue/El Mirage Road Intersection
4. El Mirage Road, Olive Avenue to Peoria Avenue
5. Peoria Avenue/El Mirage Road Intersection
6. El Mirage Road, Peoria Avenue to Cactus Road
7. Cactus Road/El Mirage Road Intersection

For each of these sub-projects, preliminary cost estimates were prepared. Included in these estimates are costs for:

1. Construction Items
2. Right-of-Way and Drainage Easements
3. Utility Relocations
4. Design, Construction Management and Administration

For the first three, a 25% contingency was included to account for variations related to the preliminary level of design. The last is a percentage of the construction item costs. **Table A** below summarizes the estimated preliminary costs for each project.

Table A: Preliminary Cost Estimates

Sub-Project	Construction	Right of Way	Utilities	Design, CM & Admin.	Total
Northern Avenue/EI Mirage Road Intersection	\$1,196,145	\$126,007	\$50,000	\$442,573	\$1,814,725
EI Mirage Road, Northern Avenue to Olive Avenue	\$2,894,984	\$1,209,511	\$357,500	\$1,071,144	\$5,533,140
Olive Avenue/EI Mirage Road Intersection	\$2,352,876	\$694,028	\$60,000	\$870,564	\$3,977,468
EI Mirage Road, Olive Avenue to Peoria Avenue	\$2,698,452	\$906,418	\$80,000	\$998,427	\$4,683,297
Peoria Avenue/EI Mirage Road Intersection	\$1,927,621	\$354,093	\$30,000	\$713,220	\$3,024,934
EI Mirage Road, Peoria Avenue to Cactus Road	\$2,695,075	\$21,513	\$30,000	\$997,178	\$3,743,766
Cactus Road/EI Mirage Road Intersection	\$2,003,516	\$72,443	\$40,000	\$741,301	\$2,857,261
Total	\$15,768,670	\$3,384,014	\$647,500	\$5,834,408	\$25,634,591

The following improvement program is recommended:

Project 1: Final Design and Construction – Northern Avenue/EI Mirage Road Intersection, EI Mirage Road, Northern Avenue to Olive Avenue and Olive Avenue/EI Mirage Road intersection. Total Cost: \$11,325,334.

Project 2: Final Design and Construction – Peoria Avenue/EI Mirage Road Intersection and EI Mirage Road, Olive Avenue to Peoria Avenue. Total Cost: \$7,708,231.

Project 3: Final Design and Construction – Cactus Road/EI Mirage Road Intersection and EI Mirage Road, Peoria Avenue to Cactus Road. Total Cost: \$6,601,027.

1.0 INTRODUCTION

In December 2009, the Final Design Concept Report (DCR) for El Mirage Road: Northern Avenue to Bell Road was completed. Within this DCR were recommendations for improvements to El Mirage Road from just north of Northern Avenue to Cactus Road. The DCR concluded that the ultimate section for El Mirage Road be an Urban Principal Arterial with three through lanes in each direction separated by a raised median. This alternative was identified as the "Master Plan" in the DCR. The "Preferred Project" would construct interim improvements to include two through lanes in each direction, with a raised median constructed in its ultimate location. Paved shoulders would be provided in lieu of urban curb, gutter & sidewalk. Drainage would be predominately via roadside ditches. Interim improvements would also be provided at the Olive Avenue, Peoria Avenue and Cactus Road intersections. The Northern Avenue intersection was not considered in the DCR because it was assumed to be improved as part of the Northern Parkway Project.

This scoping report was initiated to refine the recommendations of the DCR and to develop a program for the design and construction of improvements on El Mirage Road from Northern Avenue and Cactus Road.

2.0 PROJECT PURPOSE AND NEED

Future land development in the City of El Mirage and the West Valley will place ever increasing demands on El Mirage Road. The development of the Northern Parkway will also increase traffic volumes on El Mirage Road. The primary goal of the DCR was to develop a preliminary design for interim and ultimate improvements to El Mirage Road, not only for the Northern Avenue to Cactus Road segment, but for segments north of Cactus Road, as far north as Bell Road.

Because the scale of the DCR was much larger than just the Northern Avenue to Cactus Road segment, generalizations were made as to the horizontal alignment of El Mirage Road in this section. The principal task of this scoping report was to refine the horizontal alignment of El Mirage Road and intersecting arterials such as Olive Avenue, Peoria Avenue and Cactus Road to:

- Utilize existing improvements to lower costs and improve constructability.

- Shift the roadway to take advantage of existing right of way.
- Set horizontal alignment to avoid utility relocations, especially for those that have prior rights.

The purpose of this scoping study is to develop an improvement program for the design and construction of El Mirage Road from Northern Avenue to Cactus Road, utilizing updated costs based on the refined alignment.

This scoping report's goal is to provide the sufficient detail necessary to move the various projects forward to facilitate final design and construction of the intersection and roadway improvements with participation from the City of El Mirage and Maricopa Association of Governments.

3.0 STUDY GUIDELINES

In preparing this report, the following guidelines were developed collaboratively with MCDOT and the City of El Mirage:

1. The Northern Avenue/El Mirage Road intersection should be designed to accommodate the future Northern Parkway/El Mirage Road interchange, which will be configured as a single point, urban interchange with frontage roads.
2. In the interim, no more than two lanes in each direction are required on El Mirage Road.
3. At the intersections of El Mirage Road with Olive Avenue, Peoria Avenue and Cactus Road, ultimate intersection improvements as identified in the Master Plan Alternative of the DCR will be provided.
4. The horizontal alignment can be shifted as required to take advantage of existing improvements and right of way or to avoid utility impacts.

Costs for the projects are estimated using current construction costs. Right of way costs are estimated based on current land values along El Mirage Road. A 25 percent contingency was applied to construction, right of way and utility costs to account for the preliminary nature of the design. As design progresses, this contingency will decrease.

For some items, such as roadway excavation, quantities from the DCR were applied proportionately based on pavement quantities. The refinements of vertical alignments included in the DCR were beyond the scope of this report and will occur during final design.

4.0 PROJECT BACKGROUND

4.1 Review of Prior Reports, Plans, and Studies

The following documents and plans were reviewed for this project:

1. *Final Design Concept Report (DCR) & Environmental Assessment, El Mirage Road: Northern Avenue to Bell Road, TT167, December 2009.*
2. *Plans for Construction of El Mirage Road, Northern Avenue to Bell Road, TT167, DCR Master Plan, December 2009.*
3. *Plans for Construction of El Mirage Road, Northern Avenue to Cactus Road, TT167, DCR Preferred Project, December 2009.*
4. *Final Design Concept Report (DCR), Northern Parkway, Volumes I and II, City of Glendale, October 2003.*

4.2 Project History

The *Final Design Concept Report (DCR) & Environmental Assessment, El Mirage Road: Northern Avenue to Bell Road, TT167, December 2009*, was completed to evaluate proposed improvements to El Mirage Road (Northern Avenue to Bell Road). The El Mirage Road project is located within the jurisdictions of Maricopa County, City of El Mirage and City of Surprise. The purpose of the El Mirage Road project is to improve the traffic safety and drainage characteristics within the project limits, and provide additional roadway capacity improvements and transportation network connectivity to meet future traffic demand.

4.3 Project Location

The project is shown in **Figures 1A and 1B**. It begins at the intersection of Northern Avenue and continues north for about 3 miles to the intersection of Cactus Road with El Mirage Road. Within this section, there are a number of intersections, with Northern Avenue, Olive Avenue, Peoria Avenue and Cactus Road being major arterial intersecting streets.

This project is located within the City of El Mirage and Maricopa County. The City has jurisdiction for most of El Mirage Road and side streets.

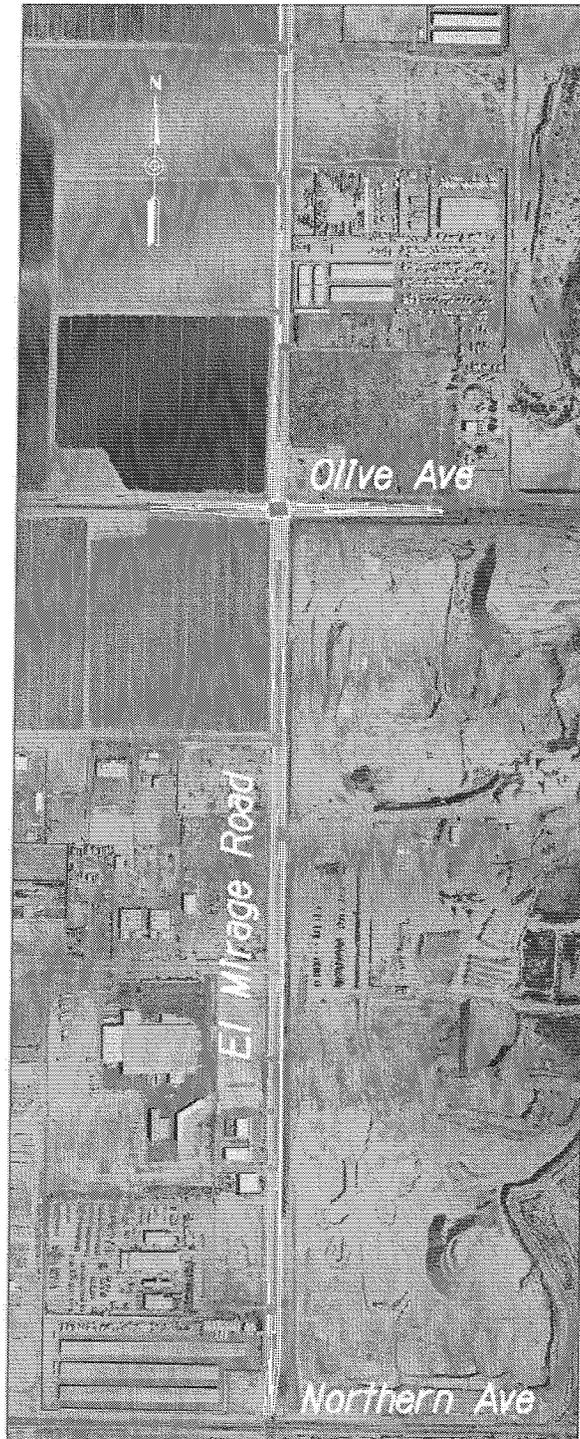


Figure 1A. Project Location (Northern to Mountain View)

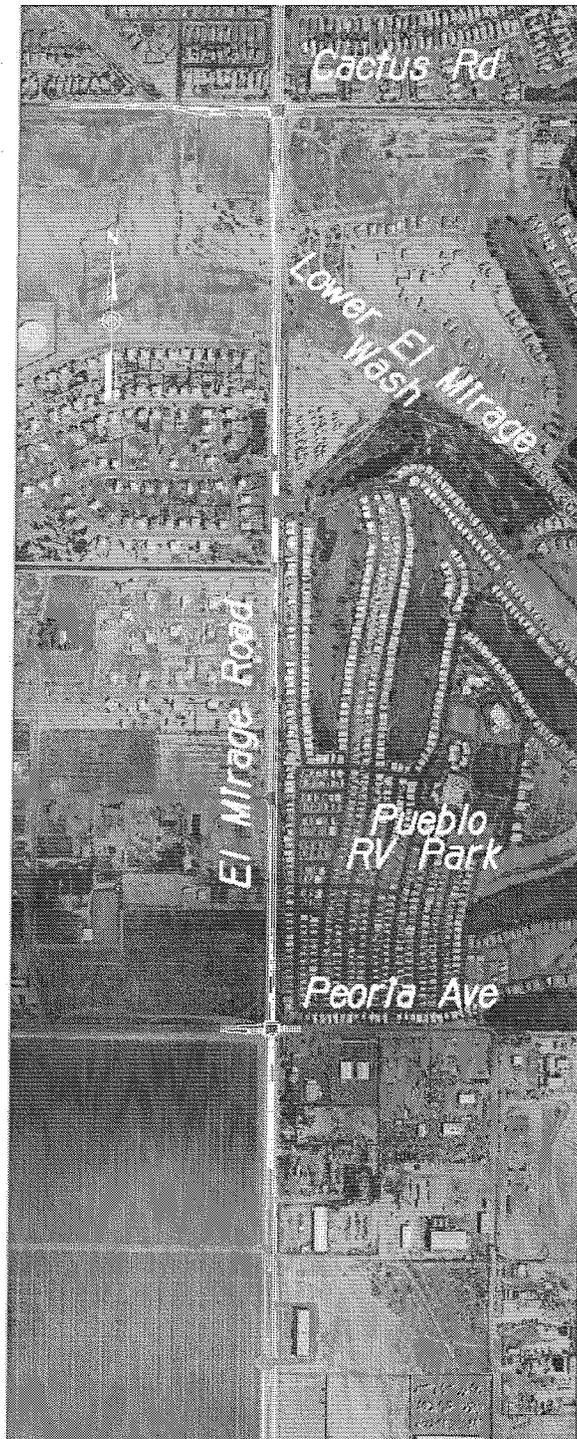


Figure 1B. Project Location (Mountain View to Cactus)

5.0 DESCRIPTION OF EXISTING CONDITIONS

5.1 Existing Roadway Geometrics and Traffic Control

From Northern Avenue to Peoria Avenue, El Mirage Road is a rural section, two lane road with unpaved shoulders. From Peoria Avenue to Varney Road, El Mirage Road is a three lane road, with one through lane in each direction and a center two way left turn lane. In this section, curb, gutter and sidewalk exists along the east side of El Mirage Road.

From Varney Road to about 1340 feet north, El Mirage Road has been widened to a five lane urban section, with curb, gutter and sidewalk along the east and west sides of the road. Between this point and Cactus Road, El Mirage Road crosses the Lower El Mirage Wash. In this segment, El Mirage Road transitions to a three lane rural section.

In places, development has occurred that has constructed urban frontage improvements. However, these improvements are discontinuous.

The following major intersections along the corridor are signalized:

- Northern Avenue/El Mirage Road
- Olive Avenue/El Mirage Road
- Peoria Avenue/El Mirage Road
- Cactus Road/El Mirage Road

Each of these intersections has left turn lanes on all approaches. In some cases, right turn lanes are also provided.

All other intersections are stop controlled with the stop signs on the side streets.

5.2 Planned Improvements

MCDOT, in conjunction with the cities of Glendale and El Mirage, is in the final planning stage for improvements to Northern Avenue. This Northern Parkway Project will eventually reconstruct Northern Avenue to a limited access facility with interchanges/grade separations at cross streets. At the Northern Avenue/El Mirage Road intersection, a Single Point Urban Interchange has been proposed. The existing Northern Avenue would be used as a westbound frontage

road, with a new eastbound frontage road constructed on the south side of the proposed Northern Parkway. The improvement plans are included in **Appendix A**.

The Flood Control District of Maricopa County has a project that will improve the existing Lower El Mirage Wash Outfall crossing at El Mirage Road. This project will upgrade the existing two barrel reinforced concrete box culverts (RCBC) to triple 8 feet by 3 feet RCBC's.

5.3 Surrounding Land Use

On the east side of El Mirage Road between Northern Avenue and Olive Avenue, the entire frontage is owned by CEMEX, who operate a gravel pit and concrete plant. On the west side, some development has occurred, but the majority of the frontage is undeveloped.

Between Olive Avenue and Peoria Avenue, on the west side of El Mirage Road, the frontage is undeveloped farmland except for a City of El Mirage Park located about halfway between Olive Avenue and Peoria Avenue. On the east side, some development has occurred but large portions are undeveloped.

Between Peoria Avenue and Cactus Road, both sides of the road are largely developed, with residential land uses south of the Lower El Mirage Wash.

5.4 Utilities

There are existing APS 12kV overhead power lines along El Mirage Road from Northern Avenue to about ½ mile north of Olive Avenue (Mountain View Road alignment). APS 12kV overhead power lines also exist along some of the intersecting streets. North of Mountain View Road, the power lines have been placed underground. According to the DCR, these lines do not have prior rights.

APS has overhead 69kV distribution lines with 12kV underbuilt lines on the north side of Olive Avenue. Unlike the overhead lines along El Mirage Road, APS has stated that Olive Avenue lines have prior rights.

There are numerous wet and dry utilities along the corridor including water, sewer, telephone, cable TV and gas. Cox Communications has overhead and underground fiber optic lines.

Southwest Gas has a gas regulating station on the west side of El Mirage Road just north of Butler Drive.

Private lined and unlined irrigation ditches are located on the west side of El Mirage Road between Butler Drive and Peoria Avenue. There is a private well site serving CEMEX on the east side of El Mirage Road south of Olive Avenue.

6.0 TRAFFIC FORECASTS

Future traffic volumes for the Bell Road/El Mirage Road intersection were based on the traffic projections in the *Final Design Concept Report (DCR) & Environmental Assessment, El Mirage Road: Northern Avenue to Bell Road*. Current (2008), 2015 and 2030 traffic volumes for El Mirage Road is summarized in **Table 1**.

Table 1: Current and Future Average Daily Traffic Volumes

Segment	2008	2015	2030
Northern Avenue to Olive Avenue	8,030	23,700	29,400
Olive Avenue to Peoria Avenue	16,930	31,100	35,700
Peoria Avenue to Cactus Road	15,590	29,400	36,700

Based on current development, it is unlikely that the 2015 volumes will equal the projections listed above in 2015. Most likely, traffic will grow slower than projected.

7.0 DESIGN CONSIDERATIONS

7.1 Design Criteria

Based on the DCR, the following design criteria were established:

Table 2. Design Criteria

Design Criteria	
2030 ADT	Refer to Table 1 for ADT information
Design Vehicle	WB-40
Design Speed	45 mph
Pavement Design Life	20 Years, 10 Years for Pavement Rehabilitation
Pavement Section	Asphalt Rubberized Pavement
Horizontal Alignment	See discussion below
Vertical Alignment	Vertical curve is required for algebraic grade difference equal to or greater than .3% (MCDOT)
Longitudinal Profile Grades	.25% Min (MCDOT) .15% Absolute Mine (MCDOT Special Cases)
Roadway Cross Slope	2%; 1% at Major Crossroads
Lane Widths	Vary from 11' to 16'
Curb Return Radii (Face of Curb)	35 feet min (MCDOT Arterials and Major Collector) per Table 6.1 • MCDOT RDM 30 feet min (MCDOT Minor Collectors and Local)
Clear Zone	30 feet desirable
Cut & Fill Slopes	3:1 Max
Curb and Gutter	MAG Standard Detail 220, Type A (Vert. Curb & Gutter)
Median Curb	MAG Standard Detail 222, Type A (Single Curb for Medians)
Access, Driveway Design	With Attached Sidewalk MCDOT Standard Detail 2036 • With Detached Sidewalk MCDOT Standard Detail 2035 • For Driveway Radii, With Attached Sidewalk City of El Mirage Detail 253 • For Driveway Radii, With Detached Sidewalk City of El Mirage Detail 254
Tapers	Narrowing: Design Speed: 1 • Shifting: (Design Speed/2):1 minimum • Widening: 8:1 Minimum
Right-of-Way	See discussion below
Utilities	MCDOT, City of El Mirage, and City of Surprise guidelines for relocations and the AUCC Public Improvement Project Guide
On-Site Drainage -Roadway	Criteria as stated in the Maricopa County Drainage Policies and Standards, including: • Catch basins (inlets and scuppers) and pipes are sized so that a 12-foot lane in each direction in maintained during a 10-year storm event; • Minimum main line pipe size=18-inches; minimum lateral pipe size=15-inches; • Manhole spacing no less than 330-feet; • MAG Standards for catch basins used (530, 531, 532, & 533); • For scupper use MAG Standard 206; • Inlets placed immediately upstream of curb returns on the upstream end of superelevation transition to minimize gutter flow across travel lanes; • On-site hydrology was computed using the Rational Method procedures outlined in the Drainage Design Manual for Maricopa County, Hydrology; • Off-site conveyance through the project was based on the 50-year storm event or the 100-year storm event if located within a FEMA regulated floodplain.

Final design will be prepared to MCDOT Standards. Coordination with the City of El Mirage for elements that they will maintain such as traffic signs/pavement markings, traffic signals and lighting will be required.

7.2 Right-of-Way

All permanent construction that will be maintained by MCDOT or the City of El Mirage will be within permanent right of way. Temporary drainage basins will be in drainage easements that will revert back to the property upon development.

Temporary construction easements (TCE) will be required where construction may impact existing features or where construction outside of the new right of way is required to restore conditions to pre-construction. TCEs will be required adjacent to most of the new right of way.

7.3 Environmental

An Environmental Assessment was completed as part of the DCR.

7.4 Geotechnical

During final design, geotechnical investigations should be done to finalize pavement designs for El Mirage Road and intersecting side streets that are to be developed.

7.5 Field Survey

Prior to final design, a new topographic survey should be completed for the project area. The preliminary design is relying on aerials surveys and other survey sources that were collected in the past. A new survey will allow recent improvements to be fully identified.

7.6 Utilities

The existing APS 12kV overhead power lines will need to be relocated to the proposed right-of-way limits or placement of the lines underground may be considered. The existing underground lines may need minor adjustments to accommodate proposed drainage facilities along with the relocation of electrical cabinets.

The APS overhead 69kV distribution lines with 12kV underbuilt lines on the north side of Olive Avenue can be avoided by shifting the alignment of El Mirage Road to the west and the alignment of Olive Avenue to the south.

There will be minor adjustments along El Mirage Road for water meters, valve boxes and fire hydrant relocations. Proposed storm drain pipes and box culverts may be in conflict with the existing El Mirage water line and require lowering of the line, which will be determined with final design.

Cox Communications overhead fiber optic lines will be relocated with APS overhead power lines either to new pole locations or underground. The underground Cox Communications fiber optic lines and Qwest underground lines may require adjustment to accommodate proposed storm drains and culverts and existing cable boxes will need to be relocated in proposed widened sections.

Southwest Gas valves will need to be adjusted and the regulating station on the west side of El Mirage Road just north of Butler Drive will need to be relocated. The line may need to be lowered in locations where the proposed storm drain and culverts cross.

Private lined and unlined irrigation ditches are located on the west side of El Mirage Road between Butler Drive and Peoria Avenue. There is a private well site serving CEMEX on the east side of El Mirage Road south of Olive Avenue. The unlined ditches and the well site are in conflict with the proposed widening, and will need to be addressed through right-of-way negotiations.

All utilities having facilities in the area should also be contacted to determine if they have plans to replace or extend their utilities in the project corridor. If so, their work can be included in the construction program, at their cost.

Where there are possibilities for conflicts between new construction and existing underground utilities, subsurface utility investigations should be done prior to completion of final design to determine if relocations or adjustments of new construction or underground utilities will be required.

8.0 PROPOSED PROJECT

Based on the analysis conducted for this report, it is recommended that the Proposed Project include:

- The Northern Avenue/El Mirage Road intersection designed and constructed to conform to the future SPUI intersection.
- The Olive Avenue, Peoria Avenue and Cactus Road intersections with El Mirage Road designed and constructed in accordance with the DCR Master Plan.
- Between intersections, El Mirage Road designed and constructed in accordance with the DCR Preferred Project.

8.1 Horizontal Alignment

The proposed construction centerline for El Mirage Road alignment is included on plan sheets in **Appendix B**. Below is a brief discussion of the horizontal alignment and the rationale used to develop the alignment.

Northern Avenue to Olive Avenue: At the Northern Avenue intersection, the construction centerline is coincident with the section line. North of the intersection, the construction centerline is moved 28 feet to the east of the section line with 10,000 foot radius reversing curves to allow the Master Plan cross section to fit into the existing right of way on the west side of the section line. This increases the right of way required from the CEMEX property, with the advantage that negotiations are only needed with one property owner. It also allows the existing pavement to be used for the southbound lanes, improving constructability. Approaching the Olive Avenue intersection, the alignment transitions through two 10,000 foot radius reversing curves to a construction centerline 9 feet west of the section line.

Olive Avenue to Peoria Avenue: The construction centerline of El Mirage Road is located 9 feet west of the section line at the Olive Avenue intersection. This offset continues until just south* of the Peoria Avenue intersection, where the construction centerline shifts another 3 feet to the west (to 12 feet west) via two 10,000 foot radius reversing curves. Since all development in this segment is on the east side of El Mirage Road (except the City park), this minimizes impacts to the developed parcels and shifts the need for new right of way towards the undeveloped west side of the right of way.

Peoria Avenue to Cactus Road: The construction centerline is shifted 12 feet west through the Peoria Avenue intersection. About 1000 feet north of Peoria Avenue, the construction centerline shifts back to being coincident with the section line, using two 10,000 foot reverse curves. This shift allows all existing curb and gutter to be retained.

8.2 Plan Sheets for the Proposed Project

Plan sheets for the Proposed Project are included in **Appendix C**.

8.3 Cost Estimates

In order to develop the recommended improvement program, the three-mile corridor was broken into seven distinct sub-projects. They are:

8. Northern Avenue/El Mirage Road Intersection
 1. El Mirage Road, Northern Avenue to Olive Avenue
 2. Olive Avenue/El Mirage Road Intersection
 3. El Mirage Road, Olive Avenue to Peoria Avenue
 4. Peoria Avenue/El Mirage Road Intersection
 5. El Mirage Road, Peoria Avenue to Cactus Road
 6. Cactus Road/El Mirage Road Intersection

For each of these sub-projects, preliminary cost estimates were prepared. Included in these estimates are costs for:

1. Construction Items
2. Right-of-Way and Drainage Easements
3. Utility Relocations
4. Design, Construction Management and Administration

For the first three, a 25% contingency was included to account for variations related to the preliminary level of design. The last is a percentage of the construction item costs.

Unit costs were obtained from MCDOT's 2010 CAR & DCR Construction Cost Worksheet. **Table 2** below summarizes the estimated preliminary costs for each project. Complete cost estimate worksheets are included in **Appendix D**.

Table 2: Preliminary Cost Estimates by Sub-Project

Sub-Project	Construction	Right of Way	Utilities	Design, CM & Admin.	Total
Northern Avenue/El Mirage Road Intersection	\$1,196,145	\$126,007	\$50,000	\$442,573	\$1,814,725
El Mirage Road, Northern Avenue to Olive Avenue	\$2,894,984	\$1,209,511	\$357,500	\$1,071,144	\$5,533,140
Olive Avenue/El Mirage Road Intersection	\$2,352,876	\$694,028	\$60,000	\$870,564	\$3,977,468
El Mirage Road, Olive Avenue to Peoria Avenue	\$2,698,452	\$906,418	\$80,000	\$998,427	\$4,683,297
Peoria Avenue/El Mirage Road Intersection	\$1,927,621	\$354,093	\$30,000	\$713,220	\$3,024,934
El Mirage Road, Peoria Avenue to Cactus Road	\$2,695,075	\$21,513	\$30,000	\$997,178	\$3,743,766
Cactus Road/El Mirage Road Intersection	\$2,003,516	\$72,443	\$40,000	\$741,301	\$2,857,261
Total	\$15,768,670	\$3,384,014	\$647,500	\$5,834,408	\$25,634,591

9.0 RECOMMENDED PROJECT PROGRAMMING

Based on discussions between MCDOT and the City of El Mirage, and analysis of data in the DCR, the following program is recommended:

Project 1: Final Design and Construction – Northern Avenue/El Mirage Road Intersection, El Mirage Road, Northern Avenue to Olive Avenue and Olive Avenue/El Mirage Road intersection. Total Cost: \$11,325,334.

Project 2: Final Design and Construction – Peoria Avenue/El Mirage Road Intersection and El Mirage Road, Olive Avenue to Peoria Avenue. Total Cost: \$7,708,231.

Project 3: Final Design and Construction – Cactus Road/El Mirage Road Intersection and El Mirage Road, Peoria Avenue to Cactus Road. Total Cost: \$6,601,027.

Based on these projects and the costs associated with the project, **Table 3** was developed to show the Recommended Improvement Program, Activities and Costs by Fiscal Year.

Table 3. Recommended Improvement Program

Fiscal Year	Project No.	Activity	Cost ^{1,2}	Total
2010/2011	1	Design	\$ 988,081	\$ 11,325,334
2011/2012	1	ROW	\$ 2,244,346	
2012/2013	1	Construction	\$ 8,092,906	
2011/2012	2	Design	\$ 709,331	\$ 7,708,231
2012/2013	2	ROW	\$ 1,414,714	
2013/2014	2	Construction	\$ 5,584,186	
2012/2013	3	Design	\$ 720,451	\$ 6,601,027
2013/2014	3	ROW	\$ 250,576	
2014/2015	3	Construction	\$ 5,630,000	

¹ Administration Costs are equally allocated to each activity

² 2010 Dollars

Table 4 presents a cash-flow summary by fiscal year.

Table 4. Cash Flow Plan (2010 Dollars)

Fiscal Year	Total
2010/2011	\$ 988,081
2011/2012	\$ 2,953,678
2012/2013	\$ 10,228,071
2013/2014	\$ 5,834,762
2014/2015	\$ 5,630,000
	\$ 25,634,591

13.0 CONCLUSIONS AND RECOMMENDATIONS

El Mirage Road will benefit from widening of the road from Northern Avenue to Cactus Road. Additional capacity will be created, leading to less delay and safer operations. By constructing improvements from the south towards the north, the impact of construction of Northern Parkway

will be mitigated. Construction of full ultimate improvements at major intersections will allow development to occur at the intersections without impacts to the traveling public.

After a thorough review of the DCR Preferred Project and Master Plan designs, an optimized horizontal alignment was developed. This refined alignment will decrease costs and increase constructability by using more of the existing improvements.

The full cost of the Proposed Project is \$25,634,591. The DCR cost for the Preferred Project, which did not include Master Plan improvements at the four major intersections, was \$26,354,900. Thus, if the recommendations of this report are followed, the roadway can be improved, to a level higher than anticipated in the DCR, at a savings of \$720,309.

APPENDIX D: PROPOSED PROJECT COST ESTIMATES

2010 SUMMARY COST ESTIMATES (Current Dollars)								
COST CATEGORIES	Factors	El Mirage Road & Northern Ave	El Mirage Rd (between Northern & Olive)	El Mirage Road & Olive Ave	El Mirage Rd (between Olive & Peoria)	El Mirage Road & Peoria Ave	El Mirage Rd (between Peoria & Cactus)	El Mirage Road & Cactus Road
Construction		\$1,196,145	\$2,894,984	\$2,352,876	\$2,698,452	\$1,927,621	\$2,695,075	\$2,003,516
Design (10% TO 15%)	12%	\$143,537	\$347,398	\$282,345	\$323,814	\$231,315	\$323,409	\$240,422
Construction Management	15%	\$179,422	\$434,248	\$352,931	\$404,768	\$289,143	\$404,261	\$300,527
Right-of-Way		\$126,007	\$1,209,511	\$694,028	\$906,418	\$354,093	\$21,513	\$72,443
Structures		\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Relocation		\$50,000	\$357,500	\$60,000	\$80,000	\$30,000	\$30,000	\$40,000
Administration (8% TO 13%)	10%	\$119,614	\$289,498	\$235,288	\$269,845	\$192,762	\$269,508	\$200,352
Total		\$1,814,725	\$5,533,140	\$3,977,468	\$4,683,297	\$3,024,934	\$3,743,766	\$2,857,261

PRELIMINARY SUMMARY COST ESTIMATES (Adjusted for Inflation)								
Assumed Annual Inflation Rate = 3.50%								
Assumed Number of Years = 5								
Adjusted Construction Cost		\$1,420,645	\$3,438,333	\$2,794,479	\$3,204,914	\$2,289,409	\$3,200,904	\$2,379,549
Design		\$170,477	\$412,600	\$335,337	\$384,590	\$274,729	\$384,108	\$285,546
Construction Management		\$213,097	\$515,750	\$419,172	\$480,737	\$343,411	\$480,136	\$356,932
Right-of-Way		\$149,657	\$1,436,520	\$824,287	\$1,076,540	\$420,552	\$25,551	\$86,040
Structures		\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Relocation		\$59,384	\$424,598	\$71,261	\$95,015	\$35,631	\$35,631	\$47,507
Administration		\$142,064	\$343,833	\$279,448	\$320,491	\$228,941	\$320,090	\$237,955
Adjusted Total		\$2,155,324	\$6,571,635	\$4,723,985	\$5,562,287	\$3,592,673	\$4,446,420	\$3,393,529

El Mirage Road & Northern Avenue

Construction Items

Description	Unit	Unit Cost	Quantity	Total Cost
Roadway Excavation	C YD	\$4.26	2466	\$10,505
Channel & Retention Basin Excavation	C YD	\$2.88		\$0
Subgrade Preparation	SQ YD	\$1.60	3680	\$5,888
Roadside Channel	LF	\$5.00	1406	\$7,030
New Asphalt Concrete Pavement	SQ YD	\$32.67	3680	\$120,226
Asphalt Concrete Pavement Overlay/Rehabilitation	SQ YD	\$18.10	9131	\$165,271
Concrete Single Curb	LF	\$14.42	851	\$12,271
Concrete Curb & Gutter	LF	\$12.36	1243	\$15,363
Concrete Sidewalk Ramp Std Det 231, Type "A"	EA	\$1,522.65	2	\$3,045
Concrete Sidewalk Std Det 230	SQ YD	\$5.60	5117	\$28,655
Traffic Signing & Striping - 5 lanes	LF	\$4.58		\$0
Traffic Signing & Striping - 7 lanes	LF	\$4.85	1420	\$6,887
Traffic Signal, Full Intersection	EA	\$300,000.00	1	\$300,000
Interconnect/Traffic Signals(Includes Cactus to Thunderbird)	LF	\$9.47	1420	\$13,447
Street Lighting	LF	\$46.00	2840	\$130,640
Catch Basin and manholes	EA	\$6,632.00	4	\$26,528
Scupper	EA	\$5,002.00		\$0
Headwall	EA	\$5,942.00	4	\$23,768
18" & 24" RGRCP, Class III	LF	\$95.00	210	\$19,950
30" & 36" RGRCP, Class III	LF	\$105.00	100	\$10,500
54" & 60" Storm Drain/Irrigation Manhole	EA	\$4,140.00	1	\$4,140
Box Culvert (Cactus Wash) 3-8'x3'	LF	\$2,805.00		\$0
Landscaping	Mile	\$480,000.00	0.11	\$52,800
Subtotal, Construction Items				\$956,916
With Contingency, 25%				\$1,196,145

Utilities

Description	Unit	Unit Cost	Quantity	Total Cost
12 kV Power Poles & Line	EA	\$8,000.00	5	\$40,000
Well	EA	\$100,000.00	0	\$0
Subtotal, Utilities				\$40,000
With Contingency, 25%				\$50,000

Right of Way

Description	Unit	Unit Cost	Quantity	Total Cost
Right of Way	ACRES	\$153,000.00	0.517	\$79,029
Drainage Easements	ACRES	\$153,000.00	0.142	\$21,777
Subtotal, Right of Way				\$100,806
With Contingency, 25%				\$126,007

El Mirage Rd, Northern Avenue to Olive Avenue

Construction Items

Description	Unit	Unit Cost	Quantity	Total Cost
Roadway Excavation	C YD	\$4.26	11,185	\$47,648
Channel & Retention Basin Excavation	C YD	\$2.88	4,729	\$13,620
Subgrade Preparation	SQ YD	\$1.60	16,693	\$26,709
Roadside Channel	LF	\$5.00	6,143	\$30,715
New Asphalt Concrete Pavement	SQ YD	\$32.67	16,693	\$545,360
Asphalt Concrete Pavement Overlay/Rehabilitation	SQ YD	\$18.10	21,675	\$392,318
Concrete Single Curb	LF	\$14.42	8,218	\$118,504
Concrete Curb & Gutter	LF	\$12.36	0	\$0
Concrete Sidewalk Ramp Std Det 231, Type "A"	EA	\$1,522.65	0	\$0
Concrete Sidewalk Std Det 230	SQ YD	\$5.60	0	\$0
Traffic Signing & Striping - 5 lanes	LF	\$4.58	4,435	\$20,312
Traffic Signing & Striping - 7 lanes	LF	\$4.85		\$0
Traffic Signal, Full Intersection	EA	\$300,000.00		\$0
Interconnect/Traffic Signals(Includes Cactus to Thunderbird)	LF	\$9.47	4,435	\$41,999
Street Lighting	LF	\$46.00	8,871	\$408,066
Catch Basin and manholes	EA	\$6,632.00		\$0
Scupper	EA	\$5,002.00	2	\$10,004
Headwall	EA	\$5,942.00	24	\$142,608
18" & 24" RGRCP, Class III	LF	\$95.00	320	\$30,400
30" & 36" RGRCP, Class III	LF	\$105.00	805	\$84,525
54" & 60" Storm Drain/Irrigation Manhole	EA	\$4,140.00		\$0
Box Culvert (Cactus Wash) 40'-3-8'x3'	LS	\$2,805.00		\$0
Landscaping	Mile	\$480,000.00	0.84	\$403,200

Subtotal, Construction Items \$2,315,988
 With Contingency, 25% \$2,894,984

Utilities

Description	Unit	Unit Cost	Quantity	Total Cost
12 kV Power Poles & Line	EA	\$8,000.00	17	\$136,000
Gas Pressure Reducing Station	EA	\$50,000.00	1	\$50,000
Well	EA	\$100,000.00	1	\$100,000

Subtotal, Utilities \$286,000
 With Contingency, 25% \$357,500

Right of Way

Description	Unit	Unit Cost	Quantity	Total Cost
Right of Way	ACRES	\$153,000.00	4.816	\$736,901
Drainage Easements	ACRES	\$153,000.00	1.508	\$230,708

Subtotal, Right of Way \$967,609
 With Contingency, 25% \$1,209,511

El Mirage Road & Olive Avenue

Construction Items

Description	Unit	Unit Cost	Quantity	Total Cost
Roadway Excavation	C YD	\$4.26	7,703	\$32,815
Channel & Retention Basin Excavation	C YD	\$2.88	2,845	\$8,194
Subgrade Preparation	SQ YD	\$1.60	11,496	\$18,394
Roadside Channel	LF	\$5.00		\$0
New Asphalt Concrete Pavement	SQ YD	\$32.67	11,496	\$375,574
Asphalt Concrete Pavement Overlay/Rehabilitation	SQ YD	\$18.10	23,503	\$425,404
Concrete Single Curb	LF	\$14.42	3,653	\$52,676
Concrete Curb & Gutter	LF	\$12.36	3,982	\$49,218
Concrete Sidewalk Ramp Std Det 231, Type "A"	EA	\$1,522.65	4	\$6,091
Concrete Sidewalk Std Det 230	SQ YD	\$5.60	28,921	\$161,958
Traffic Signing & Striping - 5 lanes	LF	\$4.58		\$0
Traffic Signing & Striping - 7 lanes	LF	\$4.85	2,164	\$10,495
Traffic Signal, Full Intersection	EA	\$300,000.00	1	\$300,000
Interconnect/Traffic Signals(Includes Cactus to Thunderbird)	LF	\$9.47	2,164	\$20,493
Street Lighting	LF	\$46.00	4,330	\$199,180
Catch Basin and manholes	EA	\$6,632.00		\$0
Scupper	EA	\$5,002.00	5	\$25,010
Headwall	EA	\$5,942.00	0	\$0
18" & 24" RGRCP, Class III	LF	\$95.00		\$0
30" & 36" RGRCP, Class III	LF	\$105.00		\$0
54" & 60" Storm Drain/Irrigation Manhole	EA	\$4,140.00		\$0
Box Culvert (Cactus Wash) 40'-3-8'x3'	LS	\$2,805.00		\$0
Landscaping	Mile	\$480,000.00	0.41	\$196,800

Subtotal, Construction Items \$1,882,301
 With Contingency, 25% \$2,352,876

Utilities

Description	Unit	Unit Cost	Quantity	Total Cost
12 kV Power Poles & Line	EA	\$8,000.00	6	\$48,000
Well	EA	\$100,000.00	0	\$0

Subtotal, Utilities \$48,000
 With Contingency, 25% \$60,000

Right of Way

Description	Unit	Unit Cost	Quantity	Total Cost
Right of Way	ACRES	\$153,000.00	2.805	\$429,215
Drainage Easements	ACRES	\$153,000.00	0.824	\$126,007

Subtotal, Right of Way \$555,222
 With Contingency, 25% \$694,028

El Mirage Rd, Olive Avenue to Peoria Avenue

Construction Items

Description	Unit	Unit Cost	Quantity	Total Cost
Roadway Excavation	C YD	\$4.26	9,810	\$41,791
Channel & Retention Basin Excavation	C YD	\$2.88	1,007	\$2,900
Subgrade Preparation	SQ YD	\$1.60	14,641	\$23,426
Roadside Channel	LF	\$5.00	5,825	\$29,125
New Asphalt Concrete Pavement	SQ YD	\$32.67	14,641	\$478,321
Asphalt Concrete Pavement Overlay/Rehabilitation	SQ YD	\$18.10	19,446	\$351,973
Concrete Single Curb	LF	\$14.42	7,558	\$108,986
Concrete Curb & Gutter	LF	\$12.36	1,724	\$21,309
Concrete Sidewalk Ramp Std Det 231, Type "A"	EA	\$1,522.65	0	\$0
Concrete Sidewalk Std Det 230	SQ YD	\$5.60	5,941	\$33,270
Traffic Signing & Striping - 5 lanes	LF	\$4.58	4,065	\$18,618
Traffic Signing & Striping - 7 lanes	LF	\$4.85		\$0
Traffic Signal, Full Intersection	EA	\$300,000.00		\$0
Interconnect/Traffic Signals(Includes Cactus to Thunderbird)	LF	\$9.47	4,065	\$38,496
Street Lighting	LF	\$46.00	8,132	\$374,072
Catch Basin and manholes	EA	\$6,632.00		\$0
Scupper	EA	\$5,002.00		\$0
Headwall	EA	\$5,942.00	28	\$166,376
18" & 24" RGRCP, Class III	LF	\$95.00	555	\$52,725
30" & 36" RGRCP, Class III	LF	\$105.00	455	\$47,775
54" & 60" Storm Drain/Irrigation Manhole	EA	\$4,140.00		\$0
Box Culvert (Cactus Wash) 40'-3-8'x3'	LS	\$2,805.00		\$0
Landscaping	Mile	\$480,000.00	0.77	\$369,600
Subtotal, Construction Items				\$2,158,761
With Contingency, 25%				\$2,698,452

Utilities

Description	Unit	Unit Cost	Quantity	Total Cost
12 kV Power Poles & Line	EA	\$8,000.00	8	\$64,000
Well	EA	\$100,000.00	0	\$0
Subtotal, Utilities				\$64,000
With Contingency, 25%				\$80,000

Right of Way

Description	Unit	Unit Cost	Quantity	Total Cost
Right of Way	ACRES	\$153,000.00	4.128	\$631,529
Drainage Easements	ACRES	\$153,000.00	0.612	\$93,605
Subtotal, Right of Way				\$725,134
With Contingency, 25%				\$906,418

El Mirage Road & Peoria Avenue

Construction Items

Description	Unit	Unit Cost	Quantity	Total Cost
Roadway Excavation	C YD	\$4.26	5,972	\$25,441
Channel & Retention Basin Excavation	C YD	\$2.88	417	\$1,201
Subgrade Preparation	SQ YD	\$1.60	8,912	\$14,259
Roadside Channel	LF	\$5.00		\$0
New Asphalt Concrete Pavement	SQ YD	\$32.67	8,912	\$291,155
Asphalt Concrete Pavement Overlay/Rehabilitation	SQ YD	\$18.10	11,348	\$205,399
Concrete Single Curb	LF	\$14.42	2,931	\$42,265
Concrete Curb & Gutter	LF	\$12.36	2,587	\$31,975
Concrete Sidewalk Ramp Std Det 231, Type "A"	EA	\$1,522.65	4	\$6,091
Concrete Sidewalk Std Det 230	SQ YD	\$5.60	20,122	\$112,683
Traffic Signing & Striping - 5 lanes	LF	\$4.58		\$0
Traffic Signing & Striping - 7 lanes	LF	\$4.85	2,006	\$9,729
Traffic Signal, Full Intersection	EA	\$300,000.00	1	\$300,000
Interconnect/Traffic Signals(Includes Cactus to Thunderbird)	LF	\$9.47	2,006	\$18,997
Street Lighting	LF	\$46.00	4,013	\$184,598
Catch Basin and manholes	EA	\$6,632.00	6	\$39,792
Scupper	EA	\$5,002.00		\$0
Headwall	EA	\$5,942.00	1	\$5,942
18" & 24" RGRCP, Class III	LF	\$95.00	315	\$29,925
30" & 36" RGRCP, Class III	LF	\$105.00	265	\$27,825
54" & 60" Storm Drain/Irrigation Manhole	EA	\$4,140.00	3	\$12,420
Box Culvert (Cactus Wash) 40'-3-8'x3'	LS	\$2,805.00		\$0
Landscaping	Mile	\$480,000.00	0.38	\$182,400
Subtotal, Construction Items				\$1,542,097
With Contingency, 25%				\$1,927,621

Utilities

Description	Unit	Unit Cost	Quantity	Total Cost
12 kV Power Poles & Line	EA	\$8,000.00	3	\$24,000
Well	EA	\$100,000.00	0	\$0
Subtotal, Utilities				\$24,000
With Contingency, 25%				\$30,000

Right of Way

Description	Unit	Unit Cost	Quantity	Total Cost
Right of Way	ACRES	\$153,000.00	1.637	\$250,434
Drainage Easements	ACRES	\$153,000.00	0.215	\$32,841
Subtotal, Right of Way				\$283,275
With Contingency, 25%				\$354,093

El Mirage Rd, Peoria Avenue to Cactus Road

Construction Items

Description	Unit	Unit Cost	Quantity	Total Cost
Roadway Excavation	C YD	\$4.26	5,154	\$21,956
Channel & Retention Basin Excavation	C YD	\$2.88		\$0
Subgrade Preparation	SQ YD	\$1.60	7,692	\$12,307
Roadside Channel	LF	\$5.00	2,055	\$10,275
New Asphalt Concrete Pavement	SQ YD	\$32.67	7,692	\$251,298
Asphalt Concrete Pavement Overlay/Rehabilitation	SQ YD	\$18.10	24,663	\$446,400
Concrete Single Curb	LF	\$14.42		\$0
Concrete Curb & Gutter	LF	\$12.36	2,694	\$33,298
Concrete Sidewalk Ramp Std Det 231, Type "A"	EA	\$1,522.65	0	\$0
Concrete Sidewalk Std Det 230	SQ YD	\$5.60	12,331	\$69,054
Traffic Signing & Striping - 5 lanes	LF	\$4.58	4,171	\$19,103
Traffic Signing & Striping - 7 lanes	LF	\$4.85		\$0
Traffic Signal, Full Intersection	EA	\$300,000.00	1	\$300,000
Interconnect/Traffic Signals(Includes Cactus to Thunderbird)	LF	\$9.47	4,171	\$39,499
Street Lighting	LF	\$46.00	8,343	\$383,778
Catch Basin and manholes	EA	\$6,632.00		\$0
Scupper	EA	\$5,002.00	3	\$15,006
Headwall	EA	\$5,942.00	8	\$47,536
18" & 24" RGRCP, Class III	LF	\$95.00	285	\$27,075
30" & 36" RGRCP, Class III	LF	\$105.00	20	\$2,100
54" & 60" Storm Drain/Irrigation Manhole	EA	\$4,140.00		\$0
Box Culvert (Cactus Wash) 40'-3-8'x3'	LS	\$2,805.00	35	\$98,175
Landscaping	Mile	\$480,000.00	0.79	\$379,200
Subtotal, Construction Items				\$2,156,060
With Contingency, 25%				\$2,695,075

Utilities

Description	Unit	Unit Cost	Quantity	Total Cost
12 kV Power Poles & Line	EA	\$8,000.00	3	\$24,000
Well	EA	\$100,000.00	0	\$0
Subtotal, Utilities				\$24,000
With Contingency, 25%				\$30,000

Right of Way

Description	Unit	Unit Cost	Quantity	Total Cost
Right of Way	ACRES	\$153,000.00	0.112	\$17,211
Drainage Easements	ACRES	\$153,000.00	0.000	\$0
Subtotal, Right of Way				\$17,211
With Contingency, 25%				\$21,513

El Mirage Road & Cactus Road

Construction Items

Description	Unit	Unit Cost	Quantity	Total Cost
Roadway Excavation	C YD	\$4.26	2,582	\$10,999
Channel & Retention Basin Excavation	C YD	\$2.88		\$0
Subgrade Preparation	SQ YD	\$1.60	3,853	\$6,165
Roadside Channel	LF	\$5.00		\$0
New Asphalt Concrete Pavement	SQ YD	\$32.67	3,853	\$125,878
Asphalt Concrete Pavement Overlay/Rehabilitation	SQ YD	\$18.10	21,299	\$385,512
Concrete Single Curb	LF	\$14.42	3,027	\$43,649
Concrete Curb & Gutter	LF	\$12.36	3,202	\$39,577
Concrete Sidewalk Ramp Std Det 231, Type "A"	EA	\$1,522.65	4	\$6,091
Concrete Sidewalk Std Det 230	SQ YD	\$5.60	22,830	\$127,848
Traffic Signing & Striping - 5 lanes	LF	\$4.58		\$0
Traffic Signing & Striping - 7 lanes	LF	\$4.85	1,953	\$9,472
Traffic Signal, Full Intersection	EA	\$300,000.00	1	\$300,000
Interconnect/Traffic Signals(Includes Cactus to Thunderbird)	LF	\$9.47	1,953	\$18,495
Street Lighting	LF	\$46.00	3,908	\$179,768
Catch Basin and manholes	EA	\$6,632.00	5	\$33,160
Scupper	EA	\$5,002.00		\$0
18" & 24" RGRCP, Class III	LF	\$95.00	195	\$18,525
30" & 36" RGRCP, Class III	LF	\$105.00	1,010	\$106,050
54" & 60" Storm Drain/Irrigation Manhole	EA	\$4,140.00		\$0
Box Culvert (Cactus Wash) 40'-3-8'x3'	LS	\$2,805.00	5	\$14,025
Landscaping	Mile	\$480,000.00	0.37	\$177,600

Subtotal, Construction Items \$1,602,813
 With Contingency, 25% \$2,003,516

Utilities

Description	Unit	Unit Cost	Quantity	Total Cost
12 kV Power Poles & Line	EA	\$8,000.00	4	\$32,000
Well	EA	\$100,000.00	0	\$0

Subtotal, Utilities \$32,000
 With Contingency, 25% \$40,000

Right of Way

Description	Unit	Unit Cost	Quantity	Total Cost
Right of Way	ACRES	\$153,000.00	0.379	\$57,955
Drainage Easements	ACRES	\$153,000.00	0.000	\$0

Subtotal, Right of Way \$57,955
 With Contingency, 25% \$72,443